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C09–M–304

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BOARD DIPLOMA EXAMINATION, (C–09)

MARCH/APRIL—2014

DME—THIRD SEMESTER EXAMINATION

ELECTRICAL ENGINEERING AND BASIC ELECTRONICS

Time : 3 hours] [*Total Marks* : 80

PART—A 3×10=30

Instructions : (1) Answer **all** questions.
(2) Each question carries **three** marks.
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Define electric field intensity.

2. State Fleming's right-hand rule.

3. State Ohm's law.

4. State the materials used for the following parts of DC generator :
(a) Yoke, *(b)* Armature core and *(c)* Brushes

5. State applications of DC series motor.

6. Define RMS value.

7. State the working principle of alternator.

8. Define capacity of a battery.

9. Briefly explain the formation of *P-N* junction diode.

10. State the procedure to be immediately adopted in case of electric shocks.

PART—B

10×5=50

Instructions : (1) Answer *any* **five** questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. A coil *X* having 400 turns and coil *Y* having 500 turns are magnetically coupled together. When 5 A current flows in coil *X*, a flux of 7·5 mWb links with both coils. Calculate self-inductance of coil *X* and mutual inductance between the two coils.

12. A 380V DC long-shunt compound generator supplies a load of 22·8 kW. Its armature, series field and shunt field resistances are 0 12 , 0 18 and 200 respectively. Calculate the generated e.m.f.

13. A circuit consists of 10 resistance in series with a inductance of 100 mH. It is connected across a supply of 1-phase, 230 V, 50 Hz. Find *(a)* reactance, *(b)* impedance, *(c)* current, *(d)* power factor and *(e)* power.

14. Explain DOL starter with a neat sketch.

15. *(a)* Distinguish between Zener and avalanche breakdown. 5

(b) Explain the operation of LCD. 5

16. Explain the construction and working principle of moving-coil voltmeter.

17. *(a)* Define *(a)* flux, *(b)* magnetic field strength. 5

(b) Draw connection diagram of DC long-shunt compound motor and state the relation between voltages and currents. 5

18. *(a)* Draw a neat circuit diagram of capacitor start 1-phase induction motor. 5

(b) Explain the constant current method of charging the batteries. 5

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